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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,015	02/20/2002	Yasukazu Iwasaki	040356-0422	4519

22428 7590 03/10/2004

FOLEY AND LARDNER
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WASHINGTON, DC 20007

EXAMINER

AVERY, BRIDGET D

ART UNIT	PAPER NUMBER
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3618

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/069,015

Applicant(s)

IWASAKI, YASUKAZU

Examiner

Bridget Avery

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner. .
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/20/02 & 5/09/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The Information Disclosure Statements filed by applicant on February 20, 2002 and May 9, 2002 are acknowledged and have been considered.
2. The change of address filed by applicant on May 3, 2003 is acknowledged and has been entered.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on September 4, 2000. It is noted, however, that applicant has not filed a certified copy of the Japanese application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azuma et al. (US Patent 5,631,532 in view of Kawatsu (US Patent 5,712,052).

Azuma et al. teaches a vehicle including a fuel cell system (3) having a fuel cell that generates power using fuel gas containing hydrogen, an air feeder that supplies air

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to the fuel cell, a fuel supply device which supplies fuel gas to the fuel cell (see column 5, lines 7-14), a motor (M) that drives the vehicle with power generated by the fuel cell, a storage battery (1) that stores power generated by the fuel cell and power regenerated by the motor (M) and supplies the stored power to the motor (as described in column 3, lines 3-6), a sensor which detects the state of charge of the battery (1) and a microprocessor (7) programmed to control operation and stop of the fuel cell based on the state of charge of the battery (1). See column 5, lines 36-44. Regarding claim 3, see column 5, lines 49-67 and column 6, lines 1-51.

Azuma et al. lacks the teaching of a toxic substance sensor and microprocessor programmed to control operation and stop of the fuel cell based on detection of a toxic substance.

Kawatsu teaches, a sensor (1) that detects a toxic substance (carbon monoxide as described in column 6, line 63) contained in the air supplied by an air feeder and a microprocessor (230) programmed to control operation and stop of a fuel cell (210) based on the result of detecting the toxic substance, as described in column 6, lines 51-67, column 15, lines 41-67 and column 16, lines 1-26. Regarding claim 6, see column 10, lines 41-49. Regarding claim 7, see column 15, lines 50-53. Regarding claim 8, the fuel supply device (218) feeds hydrogen rich gas as a gaseous fuel to fuel cells (210), as described in column 6, lines 57-60.

Based on the teachings of Kawatsu, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the vehicle of Azuma et al., to include a toxic substance sensor and a microprocessor to control

operation and stop of the fuel cell based on the result of detecting the toxic substance to effectively cancel catalyst poisoning in a fuel cell so as to improve the performance of a fuel cell, as taught by Kawatsu in column 1, lines 60-62. Note, with respect to claim 2, since Kawatsu clearly teaches stopping operation of the fuel cell when there is no hope of recovery from catalyst poisoning (column 6, lines 17-26) and Azuma et al. teaches stopping operation of the fuel cell when the battery is "fully charged" (column 6, lines 41-51), it would have been obvious to one having ordinary skill in the art to program the microprocessor to stop operation of the fuel cell at a lower toxic substance concentration the higher the state of charge of the battery to protect the fuel cell from unexpected damages. Note, with respect to claim 6, it would have been obvious to one having ordinary skill in the art, at the time the invention was made to modify the vehicle of Azuma et al., to include a map to determine the concentration of carbon monoxide, as taught in column 10, lines 41-49 and to determine the current charge of the battery, as taught Azuma et al. in column 5, lines 56-63.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Azuma et al. ('532) and Kawatsu ('052) as applied to claim 1 above, and further in view of Kawatsu ('052) 4th embodiment.

The combination of Azuma et al. and Kawatsu teach the feature described above.

The combination of Azuma et al. and Kawatsu lack the teaching of operating or stopping the fuel cell based on the time average value of the toxic substance concentration.

In 4th embodiment, Kawatsu teaches operating or stopping the fuel cell based on the average value of the toxic substance.

Based on the teachings of Kawatsu's 4th embodiment, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the combination of Azuma et al. and Kawatsu to include time average value of the toxic substance concentration as a variable for operating and stopping the fuel cell to cancel the catalyst poisoning which protects the fuel cell and the surrounding elements from significant damages.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tabata shows a moving object with fuel cells incorporated therein and method of controlling the same.

Kobayashi shows a fuel cell system and method.

Ding et al. shows a high efficiency fuel cell and battery for a hybrid powertrain.

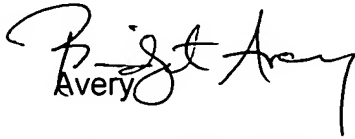
Katagiri et al. shows a humidifier.

Hara et al. shows a fuel cell power generation system.

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7. Any inquiry concerning this communication should be directed to Bridget Avery at telephone number 703-308-2086.


Avery

February 26, 2004

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BRYAN FISCHMANN
PATENT EXAMINER